

R.S.T.A. CYCLE LESSONS LEARNED

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OVERVIEW

I would like to start my presentation with a bit of history and statistics, just to give you an idea of the efforts which has been put into B-H by allied air forces in the past five years.

We'll see how Coalition Ground Forces are deployed in B-H and what the Air Power tasks are.

Then we'll get into the Reconnaissance Surveillance Target Acquisition, the topic of this presentation; what it is and how the process works; the people who work on it from initial requests to the issue of the Air Task Order.

Even if SIGINT, ELINT and Early Warning are to be considered part of the Surveillance job, those will not be covered in this presentation.

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A few words about C2 Systems used in the CAOC and connectivity's.

Some assets capabilities, and to conclude, some lessons learned.

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- Allied Nations began their involvement in B-H in 1992 with the humanitarian effort called Operation PROVIDE PROMISE. This Operation official closure was held in Sarajevo on 09 Jan. 1996 after over 160,000 metric tons of humanitarian materials had been delivered.
- 31 March 1993, the United Nations Security Council resolution 816

created a "no flight zone" over Bosnia Herzegovina. The UN requested and the North Atlantic Council approved NATO's enforcement of the NFZ..

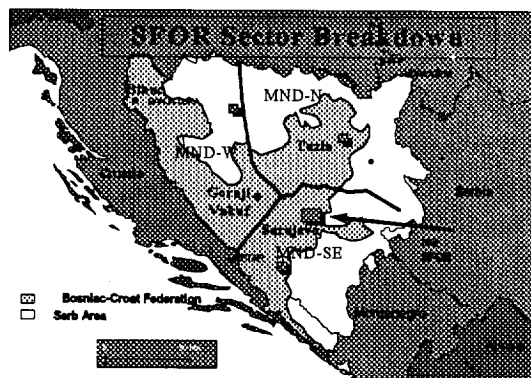
- since then, over 180,000 sorties have been flown in that theater, including two months of air strike operations conducted against Bosnian Serb army targets (Sep-Oct '95).

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Some other current figures.

- ~ 3,500 personnel from 15 nations
- 19 Air bases in 6 European countries
- 84 land-based aircraft -- less airlift
- Periodic deployments of carrier aviation in the Adriatic Sea
- 100 - 200 sorties per day
- Unique air assets

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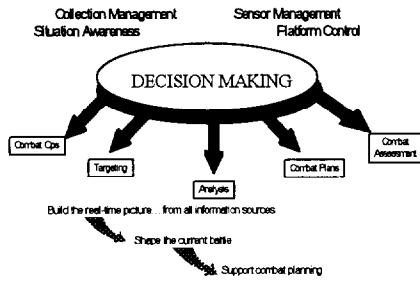
NATO stepped up to enforce implementation of the peace plan and formed, initially, the IFOR (Implementation Forces) and then the SFOR (Stabilization Forces). The country has been divided into three geographical areas of responsibility,

each one assigned to a Commander of a Multi-National Division (MND). As you can see on the slide, MND-N is led by the Americans, MND-SE is led by the French, and MND-SW is led by the British. All of these districts are truly multi-national. With this situation of our ground forces,

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these, and many others, are the main tasks of the air OPS in Bosnia.

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RSTA Cycle



Situational awareness is vital; any situation / contingency can be managed at the very best if current information is available. This is why a great deal of effort is needed in the management of reconnaissance and surveillance information. The RSTA cycle includes collection and sensor management, situation awareness and platform control; from these efforts, multinational and multi-source intelligence, surveillance and reconnaissance information can be integrated to provide decision makers with a comprehensive understanding of the battlespace. This understanding provides more effective target analysis, combat plans, combat operation and combat assessment. In this way, we see how both raw and analyzed data can be fused to build a common

picture from which all Component Commanders can operate.

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Aerial Reconnaissance Needs

- POINT TARGET COVERAGE
 - compliance monitoring
 - mass graves
 - joint target list sites
 - check points
 - demonstrations

- SURVEILLANCE/ MONITORING OF WIDE AREAS
 - situation awareness
 - force protection
 - compliance monitoring

Our principal customer (SFOR) requests two types of aerial reconnaissance: point target coverage (compliance monitoring, mass graves, joint target list sites) and SURVEILLANCE (situation awareness, force protection, compliance monitoring).

Different sensors are required for the different products desired (glossy prints, real-time motion video, reporting), at varying times of day and weather conditions.

Since Operations began in 1993, to comply with all the “requests for information”, over 16,000 sorties (Manned / Unmanned) have been flown by the best assets available, for recce / reconnaissance purposes in an AOR of over 10.000 Km²

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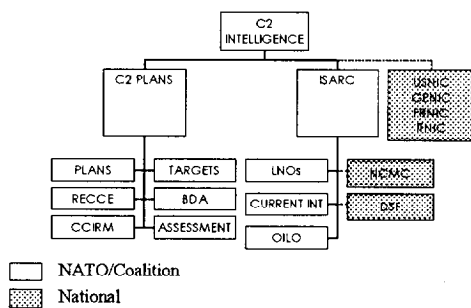
Collection and Coordination Intelligence Requirements

As you know, to optimize results, the challenge is to correctly associate target

to sensor to platform, keeping in mind capabilities and limitations, threat level and, of course, weather conditions. CCIRM is the process for reviewing and coordinating intelligence requirements and collection. It is essential to implement the priority set to minimize duplication of the same intelligence requests; and it is necessary to ensure deconfliction and mutual support between intelligence collection assets.

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CAOC C2 ORGANIZATION



In the CAOC structure, this process takes place every day in the C2, or Intelligence, area.

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Intelligence Surveillance And Reconnaissance Cell

In the CAOC /C2 Structure, the ISARC is the focal point for all RFI'S and can also be considered a kind of CAOC-SFOR interface. Established in January '96, the mission of the ISARC is to provide responsive and coordinated reconnaissance and surveillance support to Forces in Bosnia plus

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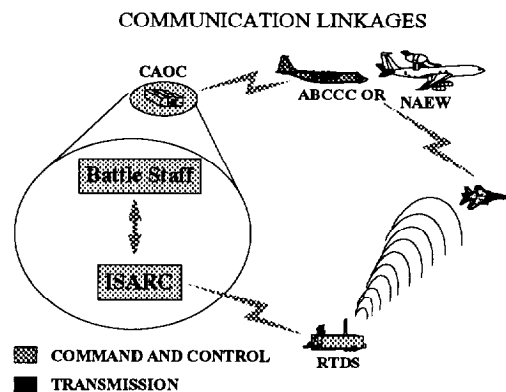
KEY TASKS

- ◆ REACH-BACK TASKING/REQUESTS
- ◆ PRODUCE DAILY CAOC REPORTS
- ◆ REVIEW ALL MISREPS FOR PERTINENT INFO
- ◆ PROVIDE INDICATIONS AND WARNING
- ◆ SITUATIONAL AWARENESS
- ◆ THREAT WARNING
- ◆ ALL-SOURCE ANALYSIS AND REPORTING

other key tasks as indicated in this slide. This Cell basically manages the collection process especially in the execution phase of operations, coordinating efforts of the Tactical Reconnaissance Cell, SIGINT Reconnaissance Cell, Dynamic Retasking Cell, Electronic Warfare Cell, National Intelligence Cells, but...

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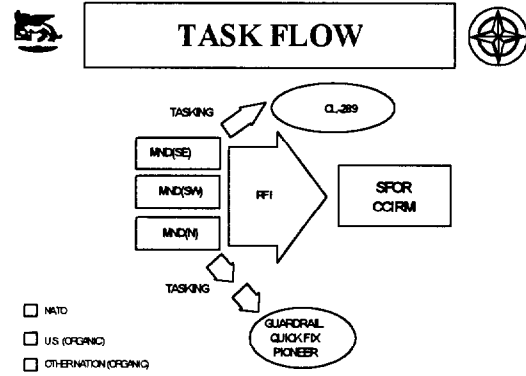
RAPID TARGETING SYSTEM (RTS)



... dynamic retasking is a core attribute of the ISARC. Being almost collocated with the Battle Staff and Unit representatives, the ISARC can provide

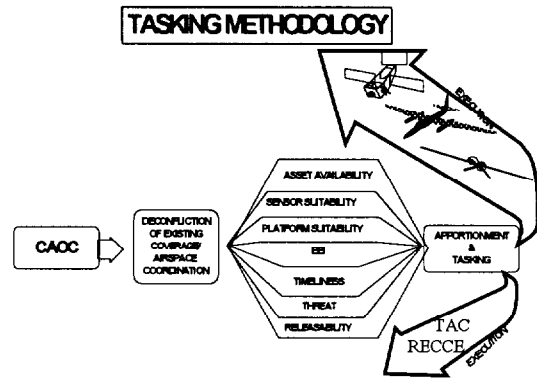
immediate inputs to an evolving situation and the means to react. This can be done by re-directing the collection platforms and associated sensors to support operations with coverage of targets of opportunity and fleeting targets, ensuring, at the same time, that operations are conducted safely with no airspace conflicts. In the same way, a better platform can be re-directed over a target which has not been positively identified in the first place. The look-shoot-look ability is a developing program that uses the RTS to first look at a scene both here with the targeting decision-makers and the pilot in the area for bomb-dropping. The decision-makers decide if the target is appropriate and then direct the pilot to get a real-time view of the target. We can revisit the site immediately to see if the objective was met. Some of the tools used include Binocular and JSAS, which provide situational awareness. The sensors currently being used include Predator, the U-2 (supported by CARS Alternative workstation) and the P-3 Photo-Telesis System. Intelligence system include the Combat Intelligence System (CIS), the Video Exploitation Workstation Software (VIEWS) and Powerscene.

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Let's now see very briefly what the tasking methodology is. "Requests for information" from our ground customers that can not be directly satisfied by using their own assets, are forwarded to SFOR CCIRM in Sarajevo for coordination.

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These are then sent to the CAOC. Here, the people I just talked about, take proper actions to have the daily ATO message issued.

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Throughout the process, we retain the capability to operate inside the ATO cycle for maximum operational effectiveness. We have the opportunity to minimize uncertainty & delays in the decision process...to exploit

opportunities...and to maintain the offensive initiative.

One of the means the Combat Staff has available in the CAOC to maintain situation awareness is the JSAS (JFACC Situational Awareness System)

- displays target locations, flight routes and ground force locations
- tailor to commander's desires for optimal views or the battlefield

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This slide shows the complexity of connectivity in theater, in addition to the importance of communications linkage.

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Several platforms have been employed for surveillance, monitoring and targeting over Bosnia. Red ones are "national assets" in support of operations, blue are dedicated to Coalition forces. Let's go quickly through the most common ones.

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Joint STARS is a Joint Air Force/Army Surveillance, Targeting and Battle Management System, designed to support air/land component commanders with:

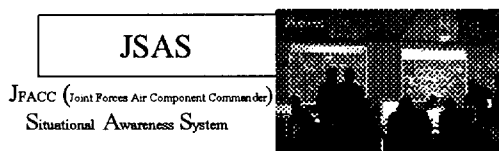
Near-real time wide-area surveillance and targeting information on moving and stationary ground targets. Its primary mission is monitoring cantonment sites.

Enhanced theater battlefield management through deep attack operations C³ and support directed at delaying, disrupting, or destroying enemy forces

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JSTARS (when in theater) uses orbits in Hungary, Croatia, and the Adriatic to provide information about ground activity. From these locations, the

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- COMBINES NEAR-REALTIME AND RECON INFORMATION WITH MAPS, IMAGERY, AND ANNOTATIONS/OVERLAYS FOR ENHANCED BATTLEFIELD PICTURE
- DISPLAYS COMBINED TADIL(ADSI), TRAP/TIBS PICTURE
- DISPLAYS PROJECTED THEATER/NATIONAL RECON COVERAGE
- DISPLAYS TARGET LOCATIONS, FLIGHT ROUTES AND GROUND FORCE LOCATIONS
- TAILOR TO COMMANDER'S DESIRES FOR OPTIMAL VIEWS OR THE BATTLEFIELD

Few words about this "CAOC wall, BARCO displayed" system; all sorts of current multi-source information is fed into this system which then...

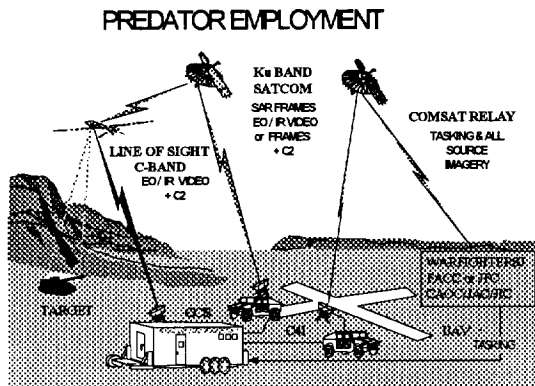
- combines near-real-time and recon information with maps, imagery, and annotations/overlays for enhanced battlefield picture
- displays combined tadil(adsi), trap/tibs picture
- displays projected theater/national recon coverage

aircraft sends the radar imagery to one of the Ground Station Modules (in Sarajevo), which injects it in the Joint Broadcast System. Users are again HQ-SFOR, MNDs, and CAOC.

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It produces freeze frame images of limited quality. Good quality real-time video is injected into the Joint Broadcast System for dissemination to HQ SFOR, MNDs and CAOC; With a long dwell time, it's easy to quickly retask, but ... weather must be clear and free of clouds and distance from ground-station must be not greater than 100NM.

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•With its EO / IR / SAR payload, Predator can be used day and night and in any weather (of course using different sensors); it has been employed quite extensively when available in theater. Its products are:

- real time EO / IR video,
 - SAR still imagery,
- all of which are widely disseminated via JBS.

During "Deliberate Force" (1995), Predator was used to provide near real-

time pre-strike target reconnaissance, followed by battle damage assessment. Its contribution was very valuable during the Pope's visit in Sarajevo and during the Municipal elections last year. This unmanned platform is optimum for high threat or denied areas.

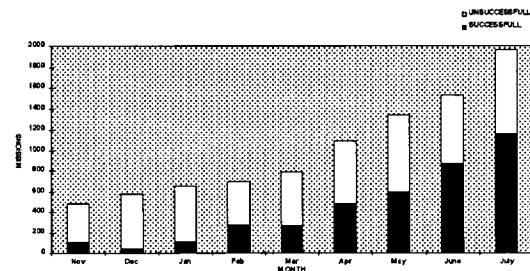
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Tactical, fixed wing reconnaissance aircraft consistently provide the best imagery. They are the key to maintaining good quality, up-to-date imagery of targets or any other key site of interest. Aircraft are currently provided by five Nations, to include Italy, France, United Kingdom, the Netherlands, Germany.

Tactical aircraft can fly under most weather to image targets. Unfortunately, these aircraft also require escort when imaging targets in high threat areas. Tactical aircraft should not be used to image targets in denied areas; for example, areas where air superiority has not been established

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MONTHLY SUCCESS RATES



Talking about reconnaissance we cannot forget ... "weather". The best EO Sensor in the world cannot defeat clouds. The best EO Sensor in the world

on a platform that cannot descend through clouds or operate in poor weather cannot take the best EO picture in the world. The constant factor in Bosnia is precipitation. No matter what form it takes, rain, snow, sleet or hail, water will fall over there. Weather has a significant impact on aerial reconnaissance collection success over Bosnia. Average success rates for TACRECCE during the year are approximately:
40% in Sep-Oct, 20% in Nov-Feb, 40% in Mar-Apr and 50-75% in May-Aug.

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LESSONS LEARNED

- Joint, coalition operations are essential ... unified approach into a sometimes uncertain, battlespace ensures unity of effort and fosters the common purpose ensuring mission success. As with any mission, competing interests degrade mission effectiveness for reconnaissance and surveillance, and can degrade the targeting cycle.
- Information must be timely ... Commanders cannot wait for information requirements to be filled 48 to 72 to 96 hours from the time the situation arises ... Commanders need answers sooner rather than later in order to take a proactive, not reactive, approach to the emerging battlespace. A robust communication architecture is essential to the dissemination of both a single-source and fused picture of the battlespace. This picture must be disseminated simultaneously to Commanders at both the operational and tactical levels of war to a level of detail and fidelity that sufficiently supports their operations.

- More attention must be paid to information integration ... single-source information can provide timely collection tippers, but a fused, integrated picture built from multi-discipline sources provides the best battlespace awareness for operational and tactical Commanders.

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- Intelligence data must be releasable ... Coalition Commanders must have the same "view" of the battlespace as each of their counterparts; coalition military operations can be effective only if national Intelligence information is fused into a correlated "all-hands" picture of the battlespace in joint, coalition command centers.

- Mobile targets are a difficult nut to crack ... tactical air missions dynamically retasked against mobile targets present the most difficult targeting dilemma. Good-quality information about the emerging target, such as key descriptive data, geological accuracy target movement and surrounding terrain features, can prove to be the difference between mission success and failure. Timing and synchronization are critical to successfully executing a mobile targeting scenario, with information flowing near-simultaneously from "sensor-to-shooter".

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- Virtual connectivity is today's reality, not tomorrow's pipe dream ... Today HQ SFOR, the MNDs and the CAOC are virtually connected through the Bosnia Command and Control

Augmentation (BC2A) network, which directly links each C2 node through video teleconferencing and share files. Other communication networks enable processing and evaluating of information collected on the Balkans at intelligence production nodes far removed from the area of operations.

- Airmen are most suited to tasking air and space platforms, including reconnaissance and surveillance assets (self explanatory).

expensive and ecologically-unsound task indeed- or scanned into an electronic file, resulting in a degradation in quality. Digital imagery retains its original quality and is far more economically available.

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CONCLUSIONS

Advanced systems can enhance our warfighting capability. Real-time or near real-time information on enemy location, dispositions, capabilities, and indicators of intentions from surveillance and reconnaissance assets gives Commanders the needed situational awareness. The ability to effectively utilize the platforms and associated sensors available, in any weather condition regardless of whether the operational theater is out of area or

- Real time video is a success story, it provides Commanders real-time situational awareness and it is the most highly demanded product in Bosnia operations. However it is a story with many chapters to come: mechanisms and methodologies to exploit, store, and retrieve video have yet to meet or match the needs of the supported users.

Digital imagery is the future. In order to distribute wet film imagery, it must either be mass-produced in hard copy - an not, is the most challenging and demanding task for any Force Commander, but this is not related to sensors themselves. What we are concerned about is:

- well trained both crews and operators,
- a robust communication linkage for optimum and widest range of communication and data dissemination,
- timely and complete situation awareness available to decision makers,
- a C3 structure designed to manage the whole process.

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If we are not able to have this, even the most advanced sensors in the world are nearly useless. Improving capabilities of sensors, of course, is something worthy and demanding, but improving our managing skills is essential.